

# PLANAR OPTICAL IMAGE SENSOR AND SYSTEM

## Abstract of the Disclosure

An optical sensor includes a transparent material having a surface that receives a fingertip of a user. A source of optical radiation is disposed on one side of the transparent material and directs the radiation through the transparent material for reflection by the fingertip. A detector is disposed on the one side of the transparent material and positioned to receive radiation reflected by the finger. The detector comprises an array of photosensitive elements positioned between the source and the transparent material and generates electrical signals in response to the detected radiation. A circuit processes the detected signals to generate an image of, for example, a print of a fingertip having a pattern of ridges and valleys. Inclined walls of the valleys reflect light back into the optical sensor where the reflected light is incident on the photosensitive elements located underneath the valleys. In contrast to the valleys, the ridges cover underlying photosensitive elements and no light reaches these covered photosensitive elements.

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